

**WNYRIC STANDARDS****Add/Change Request Form**

Submitted By:

Name Rich Calkins School District Alfred Almond Date 7/27/2012Telephone Number (607) 276-2171 E-Mail ID rcalkins@aacs.wnyric.orgHardware or Software Recommended Ubiquiti Wireless Bridge

Standards Category:

New: ☒Existing: ☐

Action Requested:

Add: ☒Modify: ☐Remove: ☐Product Name: Ubiquiti Wireless BridgeProduct Manufacturer: Ubiquiti NetworksProduct Description: Wireless Bridge

(Attach Product Technical Sheets)

<http://www.ubnt.com/airmax#nanostationm> (Nanostation Loco M5)Additional Comments: Wireless Point to Point Bridge

## EVALUATION CRITERIA

### A. Product Reliability

#### 1. Vendor / Product track record

Video Security Vendor DSS has been using these in WNYRIC districts over the last few years with no problems reported.

#### 2. Vendor support required

NO

#### 3. Ease of use

Very Easy

#### 4. Support required by RIC / school district

Support by WNYRIC

#### 5. Potential to become "White Elephant"

No

6. Training requirements

Very Little as WAN staff is already trained with wireless bridges.

B. Product-Price / Acquisition

1. Cost effectiveness

Very cost effective compared to other vendors

2. Acquire via NYS Contract or local bid

Yes

3. Cost of operation and support

None

4. Do any legal or contractual issues exist

No

C. Product-Relationship to Other Standards

1. Compatibility to existing Standards

Yes, complies with all FCC regulations

2. What other options are available

Cisco or Avaya wireless 802.11 access points

3. Relationship to previous research and changes since that time

None

D.

BOCES-Service Needs

1. Define and explain the current need

Inexpensive outdoor wireless point to point bridge

2. What existing CoSer and RIC Service does it fall under

6360 & 7710

3. What is the scope and size of the school population to be served

Small and Large Districts could use this solution

4. Instructional and/or administrative goal supported

Supports connections to remote devices and buildings (Bus Garages, Press Box)

5. Results of survey determining school district interest in using this product

Needed for connection to Bus Garage and Athletic Fields

Signature of person making request



# NanoStation *M*

# NanoStation loco *M*

Compact, Hi-Power, 2x2 MIMO AirMax TDMA Station

Models: NSM2, NSM3, NSM365, NSM5, LOCOM2, LOCOM5, LOCOM9

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Cost Effective, Hi-Performance

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Compact and Versatile Design

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Powerful integrated Antenna



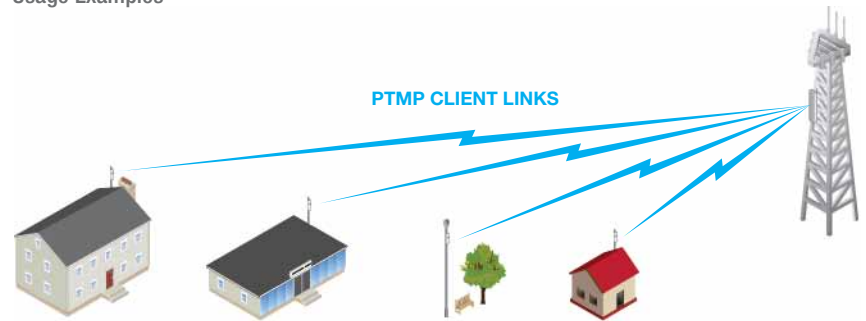
# Overview

## Leading Edge Industrial Design

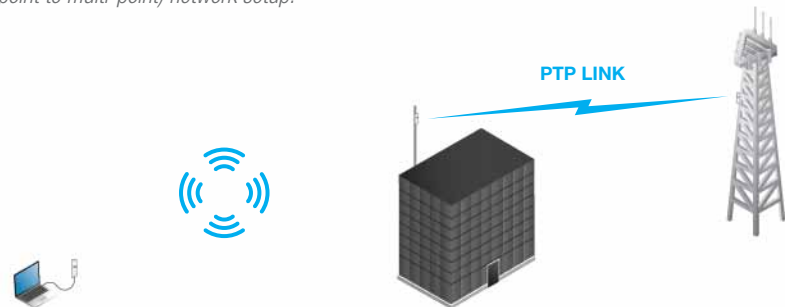
The original NanoStation set the bar for the world's first low-cost and efficiently designed outdoor broadband CPE. The new NanoStation M and NanoStation Loco M take the same concept to the future with new redesigned sleek and elegant form-factors along with integrated AirMax (MIMO TDMA Protocol) Technology.

The low cost, hi-performance, and small form factor of NanoStation M and NanoStation Loco M make them extremely versatile and ideal in several different applications (see diagrams on right for some usage examples).

### Usage Examples



*NanoStation M as powerful clients in an AirMax PTMP (point to multi-point) network setup.*



*NanoStation M as a powerful wireless client.*

*Use two NanoStation M to create a PTP link.*

## Integrated AirMax Technology

Unlike standard WiFi protocol, Ubiquiti's Time Division Multiple Access (TDMA) AirMax protocol allows each client to send & receive data using pre-designated time slots scheduled by an intelligent AP controller.

This "time slot" method eliminates hidden node collisions & maximizes air time efficiency. It provides many magnitudes of performance improvements in latency, throughput, & scalability compared to all other outdoor systems in its class.

**Intelligent QoS** Priority is given to voice/video for seamless access.

**Scalability** High capacity and scalability.

**Long Distance** Capable of high speed 50km+ links

**Latency** Multiple features dramatically reduce noise.

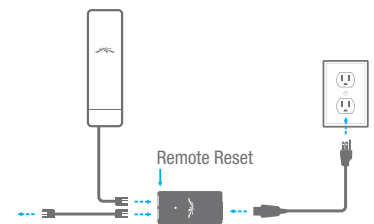
## Dual Ethernet Connectivity\*

The New NanoStation M provides a secondary ethernet port with software enabled POE output for seamless IP Video integration.



## Intelligent POE\*\*

Remote hardware reset circuitry of NanoStation M allows for device to be reset remotely from power supply location. In addition, any NanoStation can easily become 802.3af 48V compliant through use of Ubiquiti's Instant 802.3af adapter (sold separately).



\* Only NanoStation M models.

\*\* Remote reset is an additional option. Nanostation M comes standard as 24V without remote reset.

# Models

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[top] **NSM2** (2.4GHz, 10.4-11.2dBi), **NSM3** (3.4-3.7GHz, 12.2-13.7dBi), **NSM365** (3.65GHz, 12.2-13.7dBi), **NSM5** (5GHz, 14.6-16.1dBi)  
[bottom left] **LOCOM9** (900MHz, 8dBi) [bottom right] **LOCOM2** (2.4GHz, 8.5dBi), **LOCOM5** (5GHz, 13dBi)

# Software

## airOS

AirOS is an intuitive, versatile, highly developed Ubiquiti firmware technology. It is exceptionally intuitive and was designed to require no training to operate. Behind the user interface is a powerful firmware architecture which enables hi-performance outdoor multipoint networking.

### Protocol Support

### Ubiquiti Channelization

### Spectral Width Adjust

### ACK Auto-Timing

### AAP Technology

### Multi-Language Support



[www.ubnt.com/airos](http://www.ubnt.com/airos)

## airView

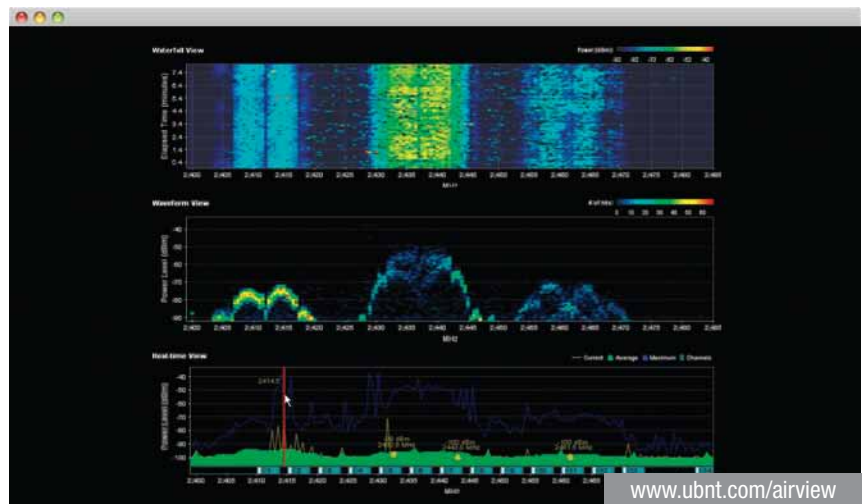
Integrated on all Ubiquiti M products, AirView provides Advanced Spectrum Analyzer Functionality: Waterfall, waveform, and real-time spectral views allow operators to identify noise signatures and plan their networks to minimize noise interference.

**Waterfall** Aggregate energy over time for each frequency.

**Waveform** Aggregate energy collected.

**Real-time** Energy is shown real-time as a function of frequency.

**Recording** Automize AirView to record and report results.



[www.ubnt.com/airview](http://www.ubnt.com/airview)

## airControl

AirControl is a powerful and intuitive web based server network management application which allows operators to centrally manage entire networks of Ubiquiti devices.

### Network Map

### Monitor Device Status

### Mass Firmware Upgrade

### Web UI Access

### Manage Groups of Devices

### Task Scheduling



[www.ubnt.com/aircontrol](http://www.ubnt.com/aircontrol)



# Specifications

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| System Information   |   |   |
|----------------------|---|---|
| Processor Specs      | Atheros MIPS 24KC, 400MHz                   |   |
| LOCOM9               |   | LOCOM, NSM                                  |
| Memory Information   | 64MB SDRAM, 8MB Flash                       | 32MB SDRAM, 8MB Flash                       |
| LOCOM                |   | NSM   |
| Networking Interface | 1 X 10/100 BASE-TX (Cat. 5, RJ-45) Ethernet | 2 X 10/100 BASE-TX (Cat. 5, RJ-45) Ethernet |

| Regulatory / Compliance Information |                           |                               |      |              |
|-------------------------------------|---------------------------|-------------------------------|------|--------------|
| LOCOM9                              |                           | M2, M5**                      | NSM3 | NSM365       |
| Wireless Approvals                  | FCC Part 15.247, IC RS210 | FCC Part 15.247, IC RS210, CE | -    | FCC Part 90Z |
| RoHS Compliance                     | YES                       |                               |      |              |

| Physical / Electrical / Environmental / Antenna |  |                           |  |
|---|--|---------------------------|--|
| Enclosure Characteristics                       | Outdoor UV Stabilized Plastic                          |                           |  |
| Mounting Kit                                    | Pole Mounting Kit included                             |                           |  |
| Power Method                                    | Passive Power over Ethernet (pairs 4, 5+; 7, 8 return) |                           |  |
| Operating Temperature                           | -30C to 75C  |                           |  |
| Operating Humidity                              | 5 to 95% Condensing                                    |                           |  |
| Shock and Vibration                             | ETSI300-019-1.4  |                           |  |
| LOCOM9  |  | LOCOM                     | NSM  |
| Dimensions                                      | 164 x 72 x 199 mm                                      | 163 x 31 x 80 mm          | 294 x 31 x 80 mm                                 |
| Weight  | 0.9 kg   | 0.18 kg                   | 0.4 kg<br>0.5 kg (M3/M365)                       |
| Power Supply (included)                         | 24V, 1A POE  | 24V, 0.5A POE             | 24V, 0.5A POE<br>24V, 1A POE (M3/M365)           |
| Max Power Consumption                           | 6.5 Watts  | 5.5 Watts                 | 8 Watts  |
| Antenna Gain                                    | 8 dBi  | 8 dBi (M2)<br>13 dBi (M5) | 11 dBi (M2)<br>13.7 dBi (M3/M365)<br>16 dBi (M5) |
| Polarization                                    | Dual Linear  |                           |  |
| RF Connector                                    | External RP-SMA  | -                         | -  |

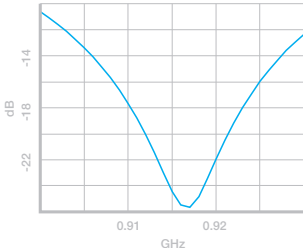
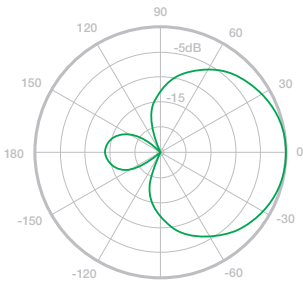
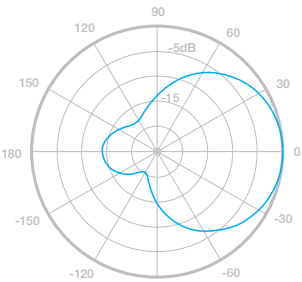
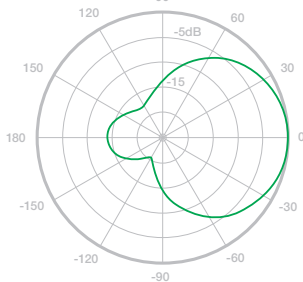
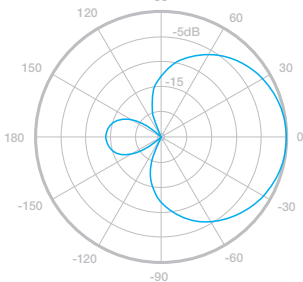
| Operating Frequency Summary (MHz) |           |           |           |            |
|-----------------------------------|-----------|-----------|-----------|------------|
| LOCOM9                            | M2**      | NSM3      | NSM365    | M5**       |
| 902-928                           | 2412-2462 | 3400-3700 | 3650-3675 | 5470-5825* |

\* Only 5745 - 5825 MHz is supported in the USA

\*\* Applies to both NanoStation M and NanoStation Loco M models

# Specifications (cont.) - LOCOM9

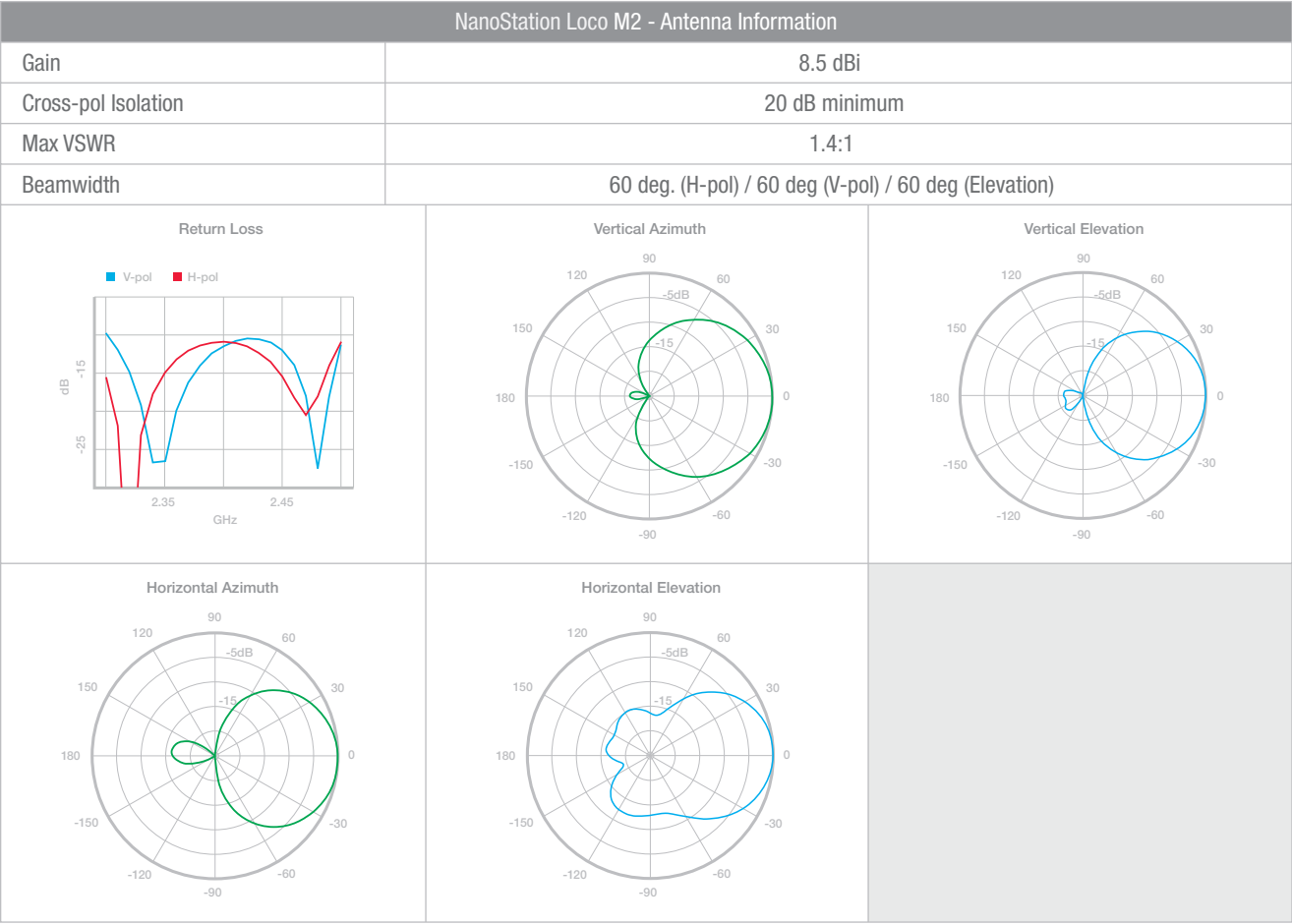
| NanoStation Loco M9 - Operating Frequency 902-928 MHz |       |        |          |                                 |       |         |          |
|---|-------|--------|----------|---------------------------------|-------|---------|----------|
| OUTPUT POWER: 28 dBm                                  |       |        |          |                                 |       |         |          |
| 900 MHz TX POWER SPECIFICATIONS                       |       |        |          | 900 MHz RX POWER SPECIFICATIONS |       |         |          |
| AirMax  | MCS0  | 28 dBm | +/- 2 dB | AirMax                          | MCS0  | -96 dBm | +/- 2 dB |
|   | MCS1  | 28 dBm | +/- 2 dB |                                 | MCS1  | -95 dBm | +/- 2 dB |
|   | MCS2  | 28 dBm | +/- 2 dB |                                 | MCS2  | -92 dBm | +/- 2 dB |
|   | MCS3  | 28 dBm | +/- 2 dB |                                 | MCS3  | -90 dBm | +/- 2 dB |
|   | MCS4  | 28 dBm | +/- 2 dB |                                 | MCS4  | -86 dBm | +/- 2 dB |
|   | MCS5  | 24 dBm | +/- 2 dB |                                 | MCS5  | -83 dBm | +/- 2 dB |
|   | MCS6  | 22 dBm | +/- 2 dB |                                 | MCS6  | -77 dBm | +/- 2 dB |
|   | MCS7  | 21 dBm | +/- 2 dB |                                 | MCS7  | -74 dBm | +/- 2 dB |
|   | MCS8  | 28 dBm | +/- 2 dB |                                 | MCS8  | -95 dBm | +/- 2 dB |
|   | MCS9  | 28 dBm | +/- 2 dB |                                 | MCS9  | -93 dBm | +/- 2 dB |
|   | MCS10 | 28 dBm | +/- 2 dB |                                 | MCS10 | -90 dBm | +/- 2 dB |
|   | MCS11 | 28 dBm | +/- 2 dB |                                 | MCS11 | -87 dBm | +/- 2 dB |
|   | MCS12 | 28 dBm | +/- 2 dB |                                 | MCS12 | -84 dBm | +/- 2 dB |
|   | MCS13 | 24 dBm | +/- 2 dB |                                 | MCS13 | -79 dBm | +/- 2 dB |
|   | MCS14 | 22 dBm | +/- 2 dB |                                 | MCS14 | -78 dBm | +/- 2 dB |
|   | MCS15 | 21 dBm | +/- 2 dB |                                 | MCS15 | -75 dBm | +/- 2 dB |

| NanoStation Loco M9 - Antenna Information (for integrated 2x2 MIMO Antenna)  |   |
|--|---|
| NanoStation Loco M9 also features a RP-SMA connector for a higher gain external antenna  |   |
| Gain   | 7.5 dBi   |
| Cross-pol Isolation  | 28 dB minimum   |
| Max VSWR   | 1.3:1   |
| Beamwidth  | 60 deg. (H-pol) / 60 deg (V-pol) / 60 deg (Elevation) |
| <div><div><div>Return Loss</div></div><div><div>Vertical Azimuth</div></div><div><div>Vertical Elevation</div></div></div> <div><div><div>Horizontal Azimuth</div></div><div><div>Horizontal Elevation</div></div><div></div></div> |   |

# Specifications (cont.) - LOCOM2

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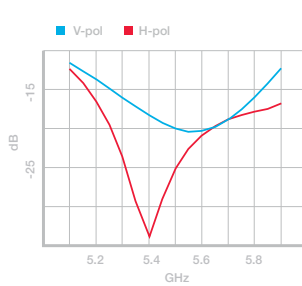
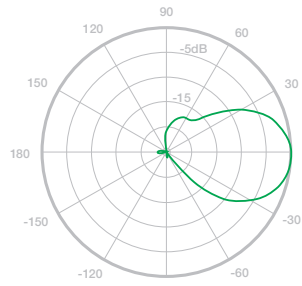
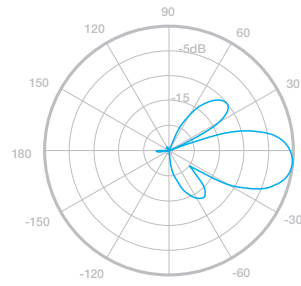
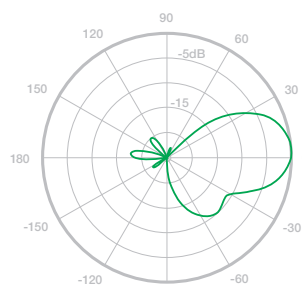
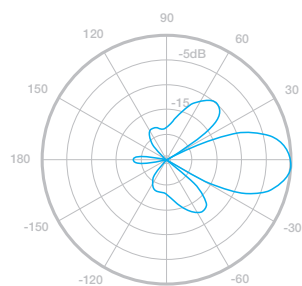
| NanoStation Loco M2 - Operating Frequency 2412-2462 MHz |           |         |           |                                 |           |         |           |
|---|-----------|---------|-----------|---------------------------------|-----------|---------|-----------|
| OUTPUT POWER: 23 dBm                                    |           |         |           |                                 |           |         |           |
| 2.4 GHz TX POWER SPECIFICATIONS                         |           |         |           | 2.4 GHz RX POWER SPECIFICATIONS |           |         |           |
|   | DataRate  | Avg. TX | Tolerance |                                 | DataRate  | Avg. TX | Tolerance |
| 11b / g   | 1-24 Mbps | 23 dBm  | +/- 2 dB  | 11b / g                         | 1-24 Mbps | -83 dBm | +/- 2 dB  |
|   | 36 Mbps   | 21 dBm  | +/- 2 dB  |                                 | 36 Mbps   | -80 dBm | +/- 2 dB  |
|   | 48 Mbps   | 19 dBm  | +/- 2 dB  |                                 | 48 Mbps   | -77 dBm | +/- 2 dB  |
|   | 54 Mbps   | 18 dBm  | +/- 2 dB  |                                 | 54 Mbps   | -75 dBm | +/- 2 dB  |
| 11n / AirMax  | MCS0      | 23 dBm  | +/- 2 dB  | 11n / AirMax                    | MCS0      | -96 dBm | +/- 2 dB  |
|   | MCS1      | 23 dBm  | +/- 2 dB  |                                 | MCS1      | -95 dBm | +/- 2 dB  |
|   | MCS2      | 23 dBm  | +/- 2 dB  |                                 | MCS2      | -92 dBm | +/- 2 dB  |
|   | MCS3      | 23 dBm  | +/- 2 dB  |                                 | MCS3      | -90 dBm | +/- 2 dB  |
|   | MCS4      | 22 dBm  | +/- 2 dB  |                                 | MCS4      | -86 dBm | +/- 2 dB  |
|   | MCS5      | 20 dBm  | +/- 2 dB  |                                 | MCS5      | -83 dBm | +/- 2 dB  |
|   | MCS6      | 18 dBm  | +/- 2 dB  |                                 | MCS6      | -77 dBm | +/- 2 dB  |
|   | MCS7      | 17 dBm  | +/- 2 dB  |                                 | MCS7      | -74 dBm | +/- 2 dB  |
|   | MCS8      | 23 dBm  | +/- 2 dB  |                                 | MCS8      | -95 dBm | +/- 2 dB  |
|   | MCS9      | 23 dBm  | +/- 2 dB  |                                 | MCS9      | -93 dBm | +/- 2 dB  |
|   | MCS10     | 23 dBm  | +/- 2 dB  |                                 | MCS10     | -90 dBm | +/- 2 dB  |
|   | MCS11     | 23 dBm  | +/- 2 dB  |                                 | MCS11     | -87 dBm | +/- 2 dB  |
|   | MCS12     | 22 dBm  | +/- 2 dB  |                                 | MCS12     | -84 dBm | +/- 2 dB  |
|   | MCS13     | 20 dBm  | +/- 2 dB  |                                 | MCS13     | -79 dBm | +/- 2 dB  |
|   | MCS14     | 18 dBm  | +/- 2 dB  |                                 | MCS14     | -78 dBm | +/- 2 dB  |
|   | MCS15     | 17 dBm  | +/- 2 dB  |                                 | MCS15     | -75 dBm | +/- 2 dB  |



# Specifications (cont.) - LOCOM5

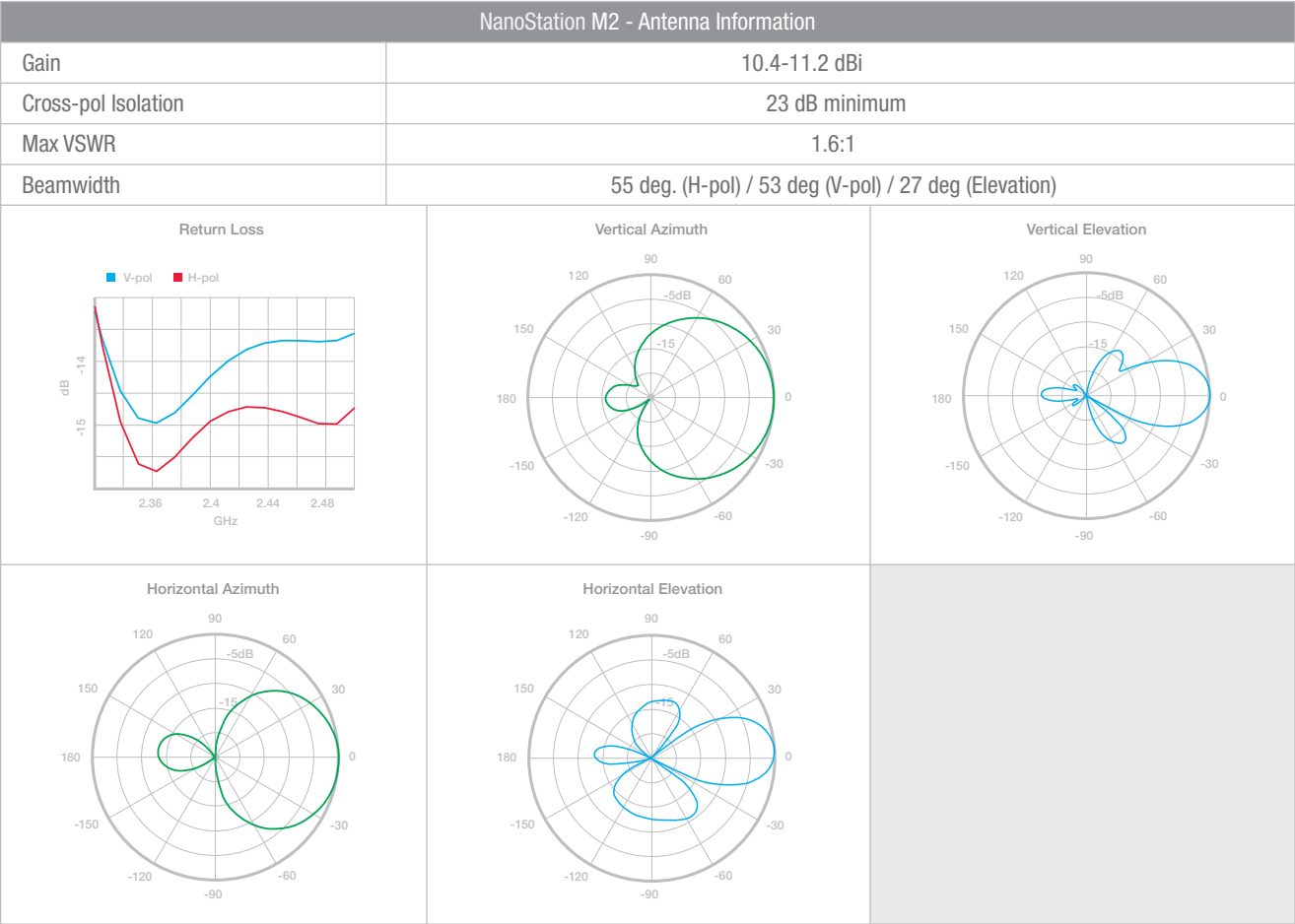
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| NanoStation Loco M5 - Operating Frequency 5470-5825 MHz* |           |         |           |                               |           |         |           |
|--|-----------|---------|-----------|-------------------------------|-----------|---------|-----------|
| OUTPUT POWER: 23 dBm                                     |           |         |           |                               |           |         |           |
| 5 GHz TX POWER SPECIFICATIONS                            |           |         |           | 5 GHz RX POWER SPECIFICATIONS |           |         |           |
|  | DataRate  | Avg. TX | Tolerance |                               | DataRate  | Avg. TX | Tolerance |
| 11a  | 6-24 Mbps | 23 dBm  | +/- 2 dB  | 11a                           | 6-24 Mbps | -83 dBm | +/- 2 dB  |
|  | 36 Mbps   | 21 dBm  | +/- 2 dB  |                               | 36 Mbps   | -80 dBm | +/- 2 dB  |
|  | 48 Mbps   | 19 dBm  | +/- 2 dB  |                               | 48 Mbps   | -77 dBm | +/- 2 dB  |
|  | 54 Mbps   | 18 dBm  | +/- 2 dB  |                               | 54 Mbps   | -75 dBm | +/- 2 dB  |
| 11n / AirMax   | MCS0      | 23 dBm  | +/- 2 dB  | 11n / AirMax                  | MCS0      | -96 dBm | +/- 2 dB  |
|  | MCS1      | 23 dBm  | +/- 2 dB  |                               | MCS1      | -95 dBm | +/- 2 dB  |
|  | MCS2      | 23 dBm  | +/- 2 dB  |                               | MCS2      | -92 dBm | +/- 2 dB  |
|  | MCS3      | 23 dBm  | +/- 2 dB  |                               | MCS3      | -90 dBm | +/- 2 dB  |
|  | MCS4      | 22 dBm  | +/- 2 dB  |                               | MCS4      | -86 dBm | +/- 2 dB  |
|  | MCS5      | 20 dBm  | +/- 2 dB  |                               | MCS5      | -83 dBm | +/- 2 dB  |
|  | MCS6      | 18 dBm  | +/- 2 dB  |                               | MCS6      | -77 dBm | +/- 2 dB  |
|  | MCS7      | 17 dBm  | +/- 2 dB  |                               | MCS7      | -74 dBm | +/- 2 dB  |
|  | MCS8      | 23 dBm  | +/- 2 dB  |                               | MCS8      | -95 dBm | +/- 2 dB  |
|  | MCS9      | 23 dBm  | +/- 2 dB  |                               | MCS9      | -93 dBm | +/- 2 dB  |
|  | MCS10     | 23 dBm  | +/- 2 dB  |                               | MCS10     | -90 dBm | +/- 2 dB  |
|  | MCS11     | 23 dBm  | +/- 2 dB  |                               | MCS11     | -87 dBm | +/- 2 dB  |
|  | MCS12     | 22 dBm  | +/- 2 dB  |                               | MCS12     | -84 dBm | +/- 2 dB  |
|  | MCS13     | 20 dBm  | +/- 2 dB  |                               | MCS13     | -79 dBm | +/- 2 dB  |
|  | MCS14     | 18 dBm  | +/- 2 dB  |                               | MCS14     | -78 dBm | +/- 2 dB  |
|  | MCS15     | 17 dBm  | +/- 2 dB  |                               | MCS15     | -75 dBm | +/- 2 dB  |

| NanoStation Loco M5 - Antenna Information   |   |  |
|---|---|--|
| Gain  | 13 dBi  |  |
| Cross-pol Isolation   | 20 dB minimum   |  |
| Max VSWR  | 1.4:1   |  |
| Beamwidth   | 45 deg. (H-pol) / 45 deg (V-pol) / 45 deg (Elevation) |  |
| <div><div><div>Return Loss</div><div><div><div><div></div><div></div></div><div><div>V-pol</div><div>H-pol</div></div></div><div></div></div></div><div><div><div>Vertical Azimuth</div><div></div></div></div><div><div><div>Vertical Elevation</div><div></div></div></div><div><div><div>Horizontal Azimuth</div><div></div></div></div><div><div><div>Horizontal Elevation</div><div></div></div></div><div></div></div> |   |  |

# Specifications (cont.) - NSM2

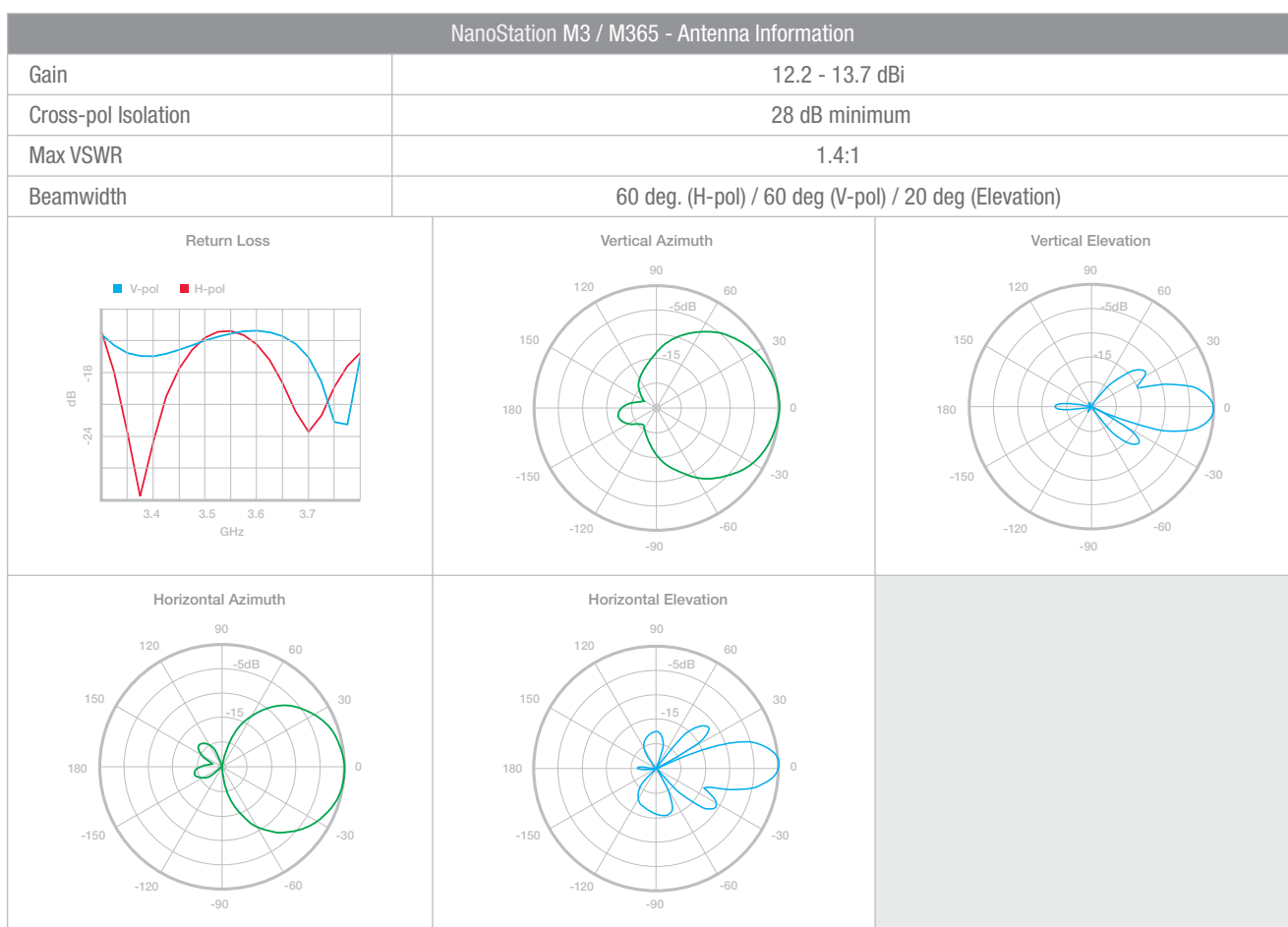
| NanoStation M2 - Operating Frequency 2412-2462 MHz |           |         |           |                                 |           |             |           |
|--|-----------|---------|-----------|---------------------------------|-----------|-------------|-----------|
| OUTPUT POWER: 28 dBm                               |           |         |           |                                 |           |             |           |
| 2.4 GHz TX POWER SPECIFICATIONS                    |           |         |           | 2.4 GHz RX POWER SPECIFICATIONS |           |             |           |
|  | DataRate  | Avg. TX | Tolerance |                                 | DataRate  | Avg. TX     | Tolerance |
| 11b / g  | 1-24 Mbps | 28 dBm  | +/- 2 dB  | 11b / g                         | 1-24 Mbps | -97 dBm min | +/- 2 dB  |
|  | 36 Mbps   | 26 dBm  | +/- 2 dB  |                                 | 36 Mbps   | -80 dBm     | +/- 2 dB  |
|  | 48 Mbps   | 25 dBm  | +/- 2 dB  |                                 | 48 Mbps   | -77 dBm     | +/- 2 dB  |
|  | 54 Mbps   | 24 dBm  | +/- 2 dB  |                                 | 54 Mbps   | -75 dBm     | +/- 2 dB  |
| 11n / AirMax                                       | MCS0      | 28 dBm  | +/- 2 dB  | 11n / AirMax                    | MCS0      | -96 dBm     | +/- 2 dB  |
|  | MCS1      | 28 dBm  | +/- 2 dB  |                                 | MCS1      | -95 dBm     | +/- 2 dB  |
|  | MCS2      | 28 dBm  | +/- 2 dB  |                                 | MCS2      | -92 dBm     | +/- 2 dB  |
|  | MCS3      | 28 dBm  | +/- 2 dB  |                                 | MCS3      | -90 dBm     | +/- 2 dB  |
|  | MCS4      | 27 dBm  | +/- 2 dB  |                                 | MCS4      | -86 dBm     | +/- 2 dB  |
|  | MCS5      | 25 dBm  | +/- 2 dB  |                                 | MCS5      | -83 dBm     | +/- 2 dB  |
|  | MCS6      | 23 dBm  | +/- 2 dB  |                                 | MCS6      | -77 dBm     | +/- 2 dB  |
|  | MCS7      | 22 dBm  | +/- 2 dB  |                                 | MCS7      | -74 dBm     | +/- 2 dB  |
|  | MCS8      | 28 dBm  | +/- 2 dB  |                                 | MCS8      | -95 dBm     | +/- 2 dB  |
|  | MCS9      | 28 dBm  | +/- 2 dB  |                                 | MCS9      | -93 dBm     | +/- 2 dB  |
|  | MCS10     | 28 dBm  | +/- 2 dB  |                                 | MCS10     | -90 dBm     | +/- 2 dB  |
|  | MCS11     | 28 dBm  | +/- 2 dB  |                                 | MCS11     | -87 dBm     | +/- 2 dB  |
|  | MCS12     | 27 dBm  | +/- 2 dB  |                                 | MCS12     | -84 dBm     | +/- 2 dB  |
|  | MCS13     | 25 dBm  | +/- 2 dB  |                                 | MCS13     | -79 dBm     | +/- 2 dB  |
|  | MCS14     | 23 dBm  | +/- 2 dB  |                                 | MCS14     | -78 dBm     | +/- 2 dB  |
|  | MCS15     | 22 dBm  | +/- 2 dB  |                                 | MCS15     | -75 dBm     | +/- 2 dB  |



# Specifications (cont.) - NSM3/NSM365

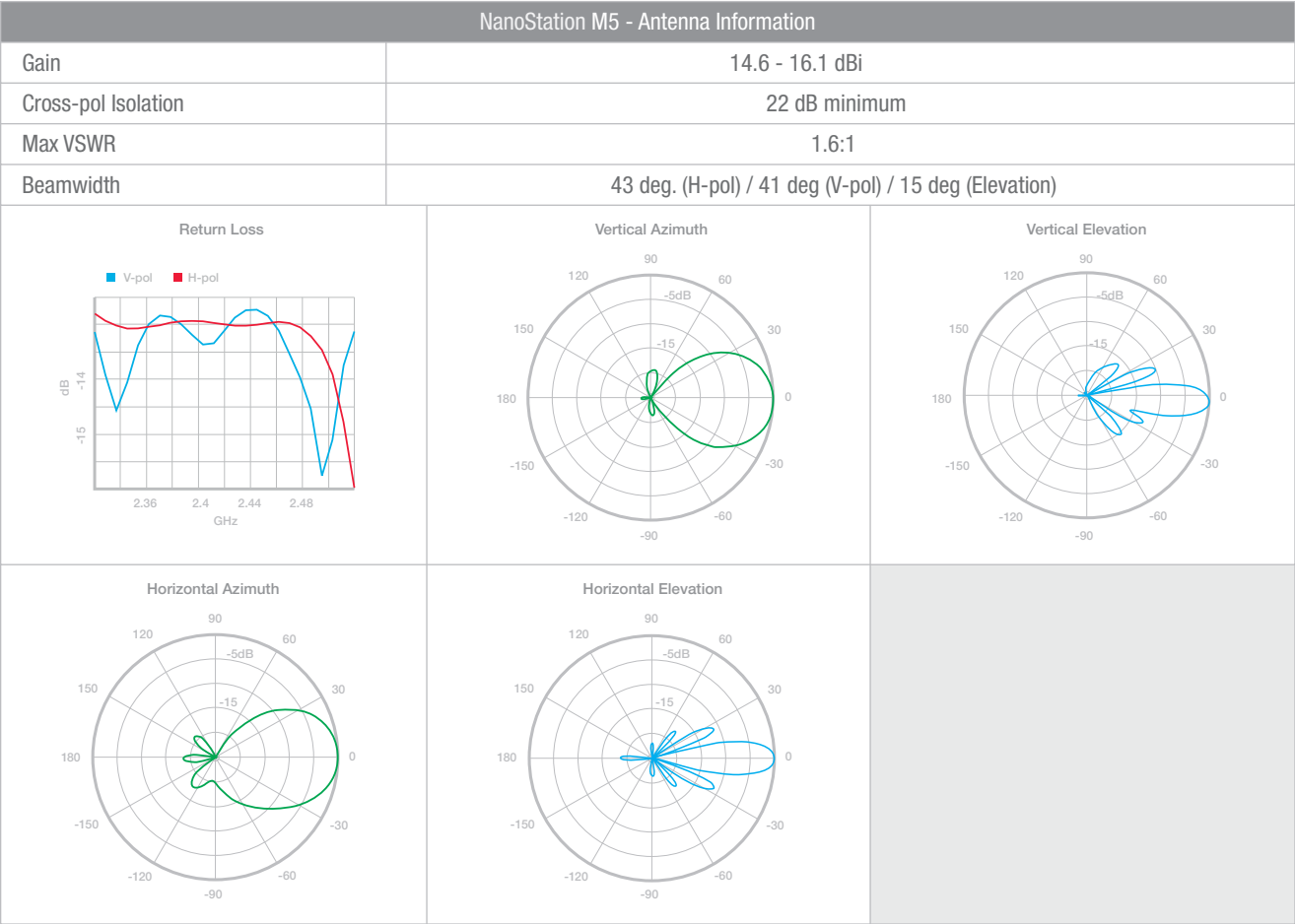
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| NanoStation M3 (3400-3700 MHz) / NanoStation M365 (3650-3675 MHz) |       |        |          |                         |       |         |          |
|---|-------|--------|----------|-------------------------|-------|---------|----------|
| OUTPUT POWER: 25 dBm  |       |        |          |                         |       |         |          |
| TX POWER SPECIFICATIONS   |       |        |          | RX POWER SPECIFICATIONS |       |         |          |
| AirMax  | MCS0  | 25 dBm | +/- 2 dB | AirMax                  | MCS0  | -94 dBm | +/- 2 dB |
|   | MCS1  | 25 dBm | +/- 2 dB |                         | MCS1  | -93 dBm | +/- 2 dB |
|   | MCS2  | 25 dBm | +/- 2 dB |                         | MCS2  | -90 dBm | +/- 2 dB |
|   | MCS3  | 25 dBm | +/- 2 dB |                         | MCS3  | -89 dBm | +/- 2 dB |
|   | MCS4  | 24 dBm | +/- 2 dB |                         | MCS4  | -86 dBm | +/- 2 dB |
|   | MCS5  | 23 dBm | +/- 2 dB |                         | MCS5  | -83 dBm | +/- 2 dB |
|   | MCS6  | 22 dBm | +/- 2 dB |                         | MCS6  | -77 dBm | +/- 2 dB |
|   | MCS7  | 20 dBm | +/- 2 dB |                         | MCS7  | -74 dBm | +/- 2 dB |
|   | MCS8  | 25 dBm | +/- 2 dB |                         | MCS8  | -93 dBm | +/- 2 dB |
|   | MCS9  | 25 dBm | +/- 2 dB |                         | MCS9  | -91 dBm | +/- 2 dB |
|   | MCS10 | 25 dBm | +/- 2 dB |                         | MCS10 | -89 dBm | +/- 2 dB |
|   | MCS11 | 25 dBm | +/- 2 dB |                         | MCS11 | -87 dBm | +/- 2 dB |
|   | MCS12 | 24 dBm | +/- 2 dB |                         | MCS12 | -84 dBm | +/- 2 dB |
|   | MCS13 | 23 dBm | +/- 2 dB |                         | MCS13 | -79 dBm | +/- 2 dB |
|   | MCS14 | 22 dBm | +/- 2 dB |                         | MCS14 | -78 dBm | +/- 2 dB |
|   | MCS15 | 20 dBm | +/- 2 dB |                         | MCS15 | -75 dBm | +/- 2 dB |



# Specifications (cont.) - NSM5

| NanoStation M5 - Operating Frequency 5470-5825 MHz |           |         |           |                               |           |             |           |
|--|-----------|---------|-----------|-------------------------------|-----------|-------------|-----------|
| OUTPUT POWER: 27 dBm                               |           |         |           |                               |           |             |           |
| 5 GHz TX POWER SPECIFICATIONS                      |           |         |           | 5 GHz RX POWER SPECIFICATIONS |           |             |           |
| 11a  | DataRate  | Avg. TX | Tolerance | 11a                           | DataRate  | Avg. TX     | Tolerance |
|  | 6-24 Mbps | 27 dBm  | +/- 2 dB  |                               | 6-24 Mbps | -94 dBm min | +/- 2 dB  |
|  | 36 Mbps   | 25 dBm  | +/- 2 dB  |                               | 36 Mbps   | -80 dBm     | +/- 2 dB  |
|  | 48 Mbps   | 23 dBm  | +/- 2 dB  |                               | 48 Mbps   | -77 dBm     | +/- 2 dB  |
|  | 54 Mbps   | 22 dBm  | +/- 2 dB  |                               | 54 Mbps   | -75 dBm     | +/- 2 dB  |
| 11n / AirMax                                       | MCS0      | 27 dBm  | +/- 2 dB  | 11n / AirMax                  | MCS0      | -96 dBm     | +/- 2 dB  |
|  | MCS1      | 27 dBm  | +/- 2 dB  |                               | MCS1      | -95 dBm     | +/- 2 dB  |
|  | MCS2      | 27 dBm  | +/- 2 dB  |                               | MCS2      | -92 dBm     | +/- 2 dB  |
|  | MCS3      | 27 dBm  | +/- 2 dB  |                               | MCS3      | -90 dBm     | +/- 2 dB  |
|  | MCS4      | 26 dBm  | +/- 2 dB  |                               | MCS4      | -86 dBm     | +/- 2 dB  |
|  | MCS5      | 24 dBm  | +/- 2 dB  |                               | MCS5      | -83 dBm     | +/- 2 dB  |
|  | MCS6      | 22 dBm  | +/- 2 dB  |                               | MCS6      | -77 dBm     | +/- 2 dB  |
|  | MCS7      | 21 dBm  | +/- 2 dB  |                               | MCS7      | -74 dBm     | +/- 2 dB  |
|  | MCS8      | 27 dBm  | +/- 2 dB  |                               | MCS8      | -95 dBm     | +/- 2 dB  |
|  | MCS9      | 27 dBm  | +/- 2 dB  |                               | MCS9      | -93 dBm     | +/- 2 dB  |
|  | MCS10     | 27 dBm  | +/- 2 dB  |                               | MCS10     | -90 dBm     | +/- 2 dB  |
|  | MCS11     | 27 dBm  | +/- 2 dB  |                               | MCS11     | -87 dBm     | +/- 2 dB  |
|  | MCS12     | 26 dBm  | +/- 2 dB  |                               | MCS12     | -84 dBm     | +/- 2 dB  |
|  | MCS13     | 24 dBm  | +/- 2 dB  |                               | MCS13     | -79 dBm     | +/- 2 dB  |
|  | MCS14     | 22 dBm  | +/- 2 dB  |                               | MCS14     | -78 dBm     | +/- 2 dB  |
|  | MCS15     | 21 dBm  | +/- 2 dB  |                               | MCS15     | -75 dBm     | +/- 2 dB  |



# TOUGH Cable

OUTDOOR CARRIER CLASS SHIELDED

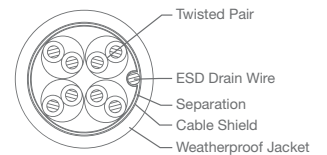
Protect your networks from the most brutal environments with Ubiquiti's industrial-grade shielded ethernet cable, TOUGH Cable.

**Increase Performance** Dramatically improve your ethernet link states, speeds, and overall performance with Ubiquiti TOUGH Cables.

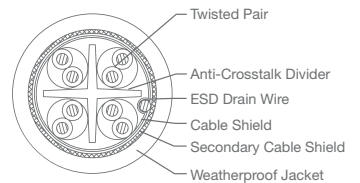
**Extreme Weatherproof** TOUGH Cables have been built to perform even in the harshest weather and environments.

**Eliminate ESD Attacks** Protect your networks from devastating ESD Attacks, TOUGH Cables eliminate ESD attacks and ethernet hardware damage.

**Extended Cable Support** TOUGH Cables have been developed to have increased power handling performance for extended cable run lengths.



**LEVEL 1**  
SHIELDING PROTECTION



**LEVEL 2**  
SHIELDING PROTECTION

## Bulletproof your networks

TOUGH Cable is currently available in two versions: Level 1 Shielding Protection and Level 2 Shielding Protection.

**Level 1** is a Category 5e (Up to 1Gbps Ethernet Support) Outdoor Carrier Class Shielded Cable.

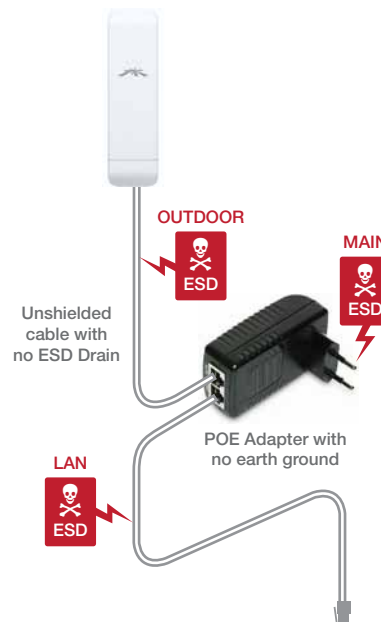
**Level 2** is a Category 5e Enhanced Gigabit Performance (1Gbps Ethernet Support) Outdoor Carrier Class Shielded Cable.

### Additional Information:

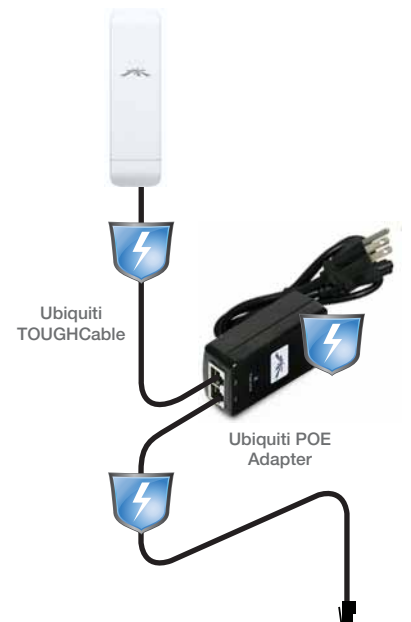
- 24 AWG copper conductor pairs
- ESD Drain Wire: 26 AWG integrated ESD Drain wire to prevent ESD attacks & damage.
- PVC outdoor rated jacket
- 0.35um foil shield
- Multi-Layered Shielding
- 1000ft (304.8m) length
- Use with TOUGH Cable Connectors (sold separately) for optimal performance

Learn more:  
[www.ubnt.com/toughcable](http://www.ubnt.com/toughcable)

ESD Attacks are overwhelmingly the leading cause for device failures. The diagram below illustrates the areas vulnerable to ESD Attacks in a defenseless network.



By using a grounded Ubiquiti POE adapter (included) along with Ubiquiti TOUGH Cable (sold separately), you can effectively eliminate ESD Attacks.







**TERMS OF USE:** The Ubiquiti radio device must be professionally installed. Shielded ethernet cable and earth grounding must be used as conditions of product warranty. It is the installers responsibility to follow local country regulations including operation within legal frequency channels, output power, and Dynamic Frequency Selection (DFS) requirements.

For further information, please visit [www.ubnt.com](http://www.ubnt.com).

All specifications in this document are subject to change without notice.

NSM-DS-042911